

**Opportunity Title:** Corticosteroid Eluting Endotracheal Tube to Mitigate Airway

Inflammation Associated with COVID-19

**Opportunity Reference Code:** DHA-JBSA-2021-0002

**Organization** U.S. Department of Defense (DOD)

**Reference Code** DHA-JBSA-2021-0002

**How to Apply** Components of the online application are as follows:

- Profile Information
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records
- Recommendation

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blanked out, blackened out, made illegible, etc.) prior to uploading into the application system.

If you have questions, send an email to [stem-workforce@orise.orau.gov](mailto:stem-workforce@orise.orau.gov). Please list the reference code of this opportunity in the subject line of the email.

All documents must be in English or include an official English translation.

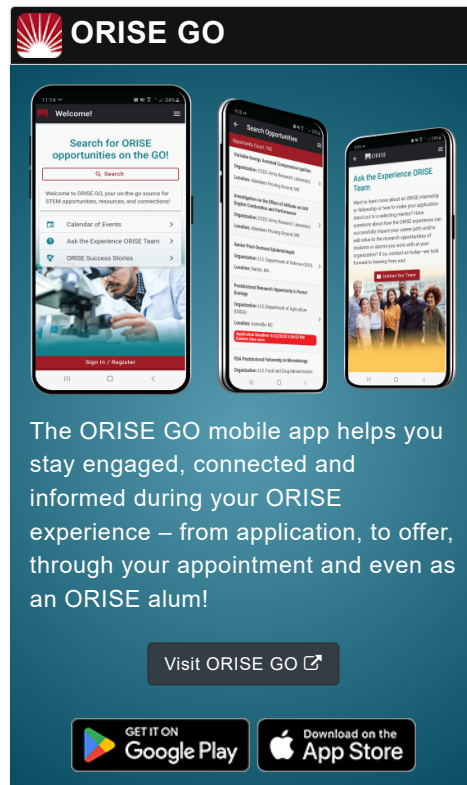
## Description

Join the US Air Force and Defense Health Agency in cutting edge research to advance emergency airway management! Participant will engage in developing and testing delivery of therapeutics via a novel, drug-eluting, polymer-coated endotracheal that will decrease scar formation, tissue inflammation and development of stenosis. This ORISE post doc scientist will play a key role in the study execution and completion, leading product development and laboratory-based testing. He/She will have access to a variety of laboratory and pre-clinical opportunities that will enhance vital research skill sets. This project is sponsored by the Defense Health Agency (DHA)'s efforts against COVID.


Participant will engage in the following activities which will advance the field of high throughput toxicological screening. As part of a collaborative team between the University of Texas at San Antonio (UTSA) Biomedical Engineering Department, 59MDW Office of the Chief Scientist, and the Battlefield Health & Trauma Center Dental and Craniofacial Research Department at the US Army Institute of Surgical Research led by MAJ Gregory Dion, MD, MS, the ORISE post-doc scientist will work closely across partnering institutions to execute and complete task related to the funded project to employ a polymer-mesh coated endotracheal tube to deliver traditional corticosteroid treatment (dexamethasone), targeted antifibrotic siRNA molecules (anti-SMAD3), valacyclovir, and Roxadustat (FG-4592) and compare wound healing and drug delivery.



In collaboration with the Principal Investigator (PI) in execution of above listed study, activities will include, but are not limited to:

1. Coordinating database of study results, endoscopic images, statistical analyses, and sample storage/location.
2. Provide guidance to Master's level ORISE students performing laboratory testing.
3. Coordinate and maintain minutes/notes from weekly lab meeting with PI, MAJ Gregory Dion, MD, MS, FACS be it virtual or in-person.
4. Provide technical support for benchtop and explanted sample testing as well as

The ORISE GO mobile app helps you stay engaged, connected and informed during your ORISE experience – from application, to offer, through your appointment and even as an ORISE alum!

Visit ORISE GO 

GET IT ON Google Play  Download on the App Store 

**Opportunity Title:** Corticosteroid Eluting Endotracheal Tube to Mitigate Airway Inflammation Associated with COVID-19

**Opportunity Reference Code:** DHA-JBSA-2021-0002

associated test development.

5. Assist with writing/preparing necessary monthly, quarterly, and annual/final project reports and documents, manuscripts and/or presentations

6. Assist with identifying and completing necessary purchasing requests for review and submission by the PI.

7. Perform and oversee electrospinning and drug loading pharmacokinetic testing of polymer endotracheal tubes.

8. Perform and oversee drug elution loading response curves for fiber mesh thickness and drug delivery doses for all included drug targets.

9. Perform and/or oversee the assessment of bioactivity of eluted drugs compared to standard biological benchmarks.

10. Perform and/or oversee stability and degradation of drug coating over time in vitro.

11. Assist with collection of clinical samples performed at a vivarium, maintaining study database and study data linking specimens, exposure time, and outcome data.

12. Perform and/or oversee scanning electron microscopy (SEM) and micro CT of all explanted stents.

13. Perform and/or oversee biomechanical testing of explanted tissue specimens.

14. Assist with coordination collection samples and subsequent whole genome microbiome sequencing of collected samples.

15. Assist with coordination of histological slide preparation, interpretation, and associated assays to include IL-17 assessment among others.

Desired Appointment Start Date: 3/1/2021

#### **Appointment Length**

This appointment is a twelve month research appointment, with the possibility to be renewed for additional research periods. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

#### **Participant Benefits**

Participants will receive a stipend to be determined by DHA. Stipends are typically based on the participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement. *Participants are eligible to purchase health insurance through ORISE.*
- Relocation Allowance
- Training and Travel Allowance

#### **Nature of Appointment**

The participant will not enter into an employee/employer relationship with ORISE, ORAU, DOD, or any other office or agency. Instead, the participant will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment.

While participants will not enter into an employment relationship with DOD or any other agency, this opportunity will require a suitability investigation/background investigation. Any offer made is considered tentative pending favorable outcome of

**Opportunity Title:** Corticosteroid Eluting Endotracheal Tube to Mitigate Airway Inflammation Associated with COVID-19













**Opportunity Reference Code:** DHA-JBSA-2021-0002

the investigation.

### Qualifications

- Possess a PhD in Biomedical Engineering or closely related discipline or be graduating December 2020 with such a degree.
- Have demonstrated professional competence and success in the form of peer-reviewed publications and presentations
- Display knowledge and competency in pharmacokinetic modeling, absorption, distribution, metabolism, and excretion pathways in endotracheal delivery
- Have practical and functional knowledge of experimental study scaffold vascularization and tracheal scar tissue models on chip
- Have bench skills including proficiency in muscle cell culture on electro-conductive PVDF and biomechanical testing and analysis strategies
- Familiarity with graphing software such as Graphpad Prism and Sigma plot
- Have excellent independence and communication skills

### Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 12/20/2020 12:00:00 AM.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 )
  - **Communications and Graphics Design** (2 )
  - **Computer, Information, and Data Sciences** (16 )
  - **Earth and Geosciences** (21 )
  - **Engineering** (27 )
  - **Environmental and Marine Sciences** (14 )
  - **Life Health and Medical Sciences** (45 )
  - **Mathematics and Statistics** (10 )
  - **Other Non-Science & Engineering** (2 )
  - **Physics** (16 )
  - **Science & Engineering-related** (1 )
  - **Social and Behavioral Sciences** (27 )